
ZERO VELOCITY VALVE

ZERO VELOCITY VALVE CALLED AS WATER HAMMER ARRESTER

The principal behind the design of this valve is to arrest the forward moving water column at zero movement i.e. when its velocity is zero and before any return velocity is established.

The valve fitted in a pipe line consists of an outer shell and an inner fixed dome leaving a streamlined annular passage for water. A closing disc is mounted on center and peripheral guide bar and is held in the close position by one or more conical compressed springs when there is no flow of water. One or two nos. (depends upon the size of valve) bypass arrangement (not less than 10 % of nominal bore area) connects the upstream and downstream side of disc. The springs are so designed that the disc remains in fully open position for velocity of water equal to 25 % of the designed maximum velocity in the pipe line.

With sudden stoppage of the pumps forward velocity of the water column goes on decreasing due to friction and gravity. When the forward velocity becomes less than 25 % of the maximum, the disc starts closing at the same rate as the velocity of water. The disc comes to the fully closed position when forward velocity approaches zero magnitude. The water column on the upstream side of the valve is thus prevented from acquiring a reversed velocity and taking part in creating surge pressure. The bypass valve maintains balanced pressures on the disc and also avoids vacuum on the downstream side of valve if that column experiences certain reversal.

The main advantages of ZERO VELOCITY VALVES are :

(i) Controlled closing characteristics. (ii) Low head loss due to streamlined design.

PURPOSE OF ZERO VELOCITY VALVE

Zero velocity valves are developed to eliminate water hammer problems. In common practices swing check valves are installed on the pump discharge end. Theoretically, swing check valves close quickly when the pump is shut off by actually not quick enough to prevent reversal velocity of flow. The flap of the swing check valves will slam against its body seat and will cause noise, Vibration, Pipe stressing and seat damaging. All these hindrance can be controlled by use of spring return ZERO VELOCITY VALVE.

APPLICATION & LOCATION OF ZERO VELOCITY VALVE

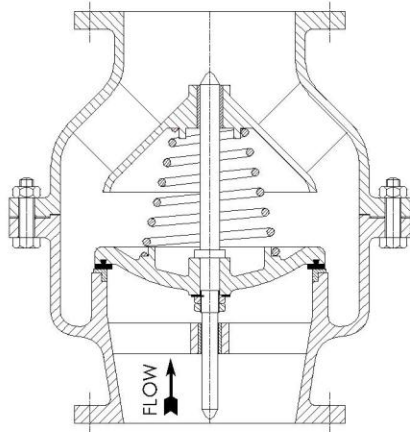
Zero velocity valve has function to problem for limiting water surge after power failure. Locations of the valves have therefore to be based on the results of the analysis of water column separation.

Zero velocity valves are so placed that the entire length of water column is suitably divided in spite of differing gradients and undulations. More than one valve may be required in such cases.

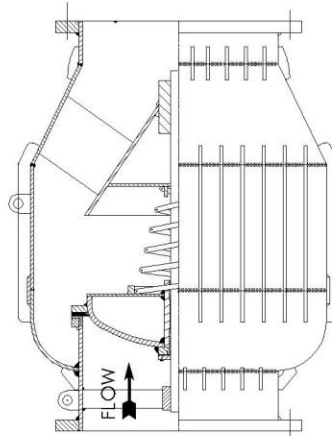
Zero velocity valve can be mounted in any position i.e. horizontal, vertical or inclined pumping main as well as gravity main, due to the center guided spring assisted design. This eliminates the problems arising from installing a valve in "WRONG" orientation or the necessity of changing existing lines to accommodate the valve design. Inventory requirements are reduced because one valve design can be used in a wide variety of application, regardless of the valve's orientation in the line (When the valve is used in vertical downward flow position, a heavier spring is simply substituted to compensate for the weight of the disc and stem).

ZERO VELOCITY VALVE

Parent / Basic Material : Fabricated Steel, Cast Iron, Cast Steel, S.G.Iron
General fluid application : Irrigation Water, Clear water, Raw Water
End Flange standard : Barrel End / Plain end, Flanged end (any international Std.),
Manufacturing Range of Size : 80 mm to 3000 mm,
Rating : PN - 6, PN - 10 & PN - 15,



CAST IRON FLANGED END VALVE



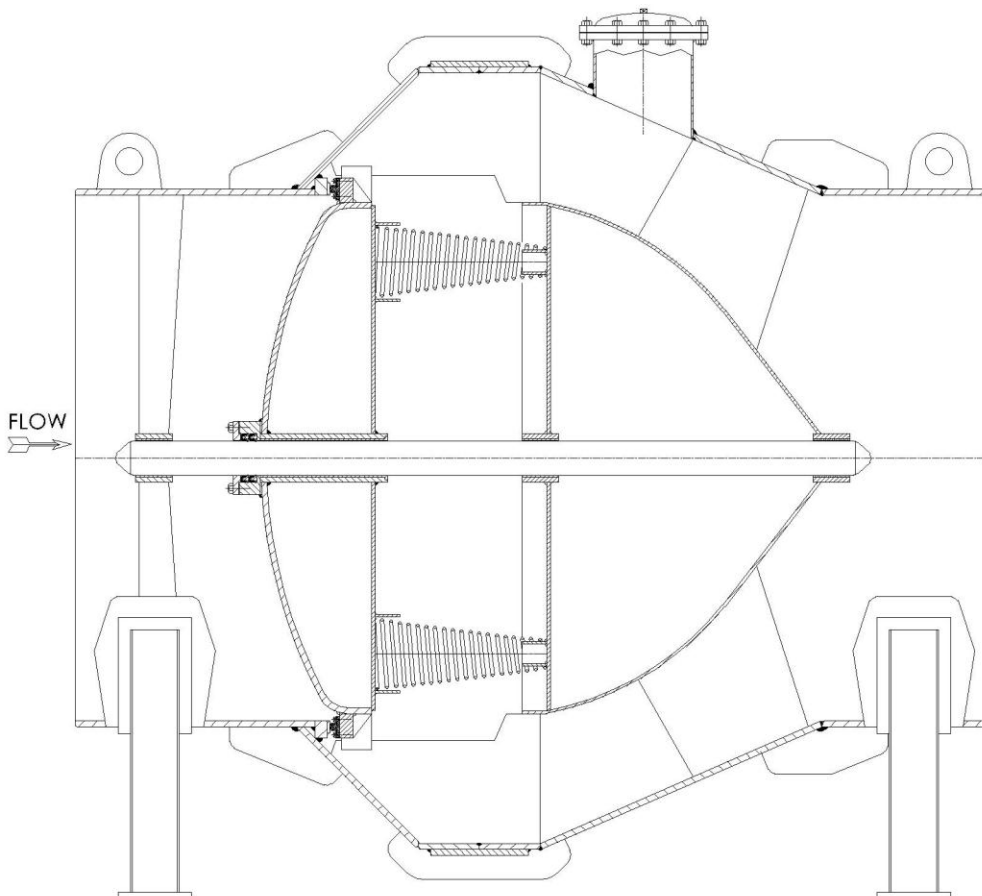
FABRICATED STEEL FLANGED END VALVE

CHARACTERISTIC FEATURE

- * LEAK PROOF SEALING
- * ROBUST CONSTRUCTION
- * TROUBLE FREE SERVICE
- * INTER CHANGABLE PARTS
- * EASY INSTALLATION
- * LONG LIFE SERVICE
- * LOW MAINTANANCE
- * NOISELESS OPERATION

OPTIONAL ARRANGEMENT

- * BY PASS
- * DRAIN VALVE / SCOUR
- * CLEANING DOOR
- * MANHOLE COVER
- * LIFTING LUGS
- * AIR RELEASE PLUG



FABRICATED STEEL BARREL END VALVE